

APPLICANT: GLUKHOVSKY, Arkady  
SERIAL NO.: 10/808,573  
FILED: March 25, 2004  
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### AMENDMENTS TO THE CLAIMS

Please amend the claims as follows and cancel claims marked as cancelled without prejudice.

#### Claims 1-36 (Cancelled)

37. (New) A method for determining a direction of flow through a gastrointestinal tract, the method comprising:  
inserting first and second pH sensors within the gastrointestinal tract, the first and second pH sensors separated by a distance D;  
sampling an output of the first and second pH sensors over time;  
determining a gradient between the output of the first and second pH sensors over time;  
and  
determining the direction of flow over the distance D based on the gradient.
38. (New) The method according to claim 37 comprising immobilizing the first and the second pH sensors in the gastrointestinal tract.
39. (New) The method according to claim 37 comprising immobilizing the first and the second pH sensors in an esophagus.
40. (New) The method according to claim 37 wherein the first and the second pH sensors are comprised within a swallowable capsule.
41. (New) The method according to claim 37 comprising transmitting the output of the first and the second pH sensors to an external receiver.
42. (New) The method according to claim 37 comprising transmitting the determined direction of flow to an external receiver.
43. (New) The method according to claim 37 comprising diagnosing GERD based on output of the first and the second pH sensors.
44. (New) The method according to claim 37 comprising determining the velocity of flow over the distance D based on the output of the first and second pH sensors.
45. (New) A system for determining a direction of flow through a gastrointestinal tract, the system comprising:

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first and second pH sensors configured to be inserted within the gastrointestinal tract, the pH sensors separated by a distance D; and  
a processor configured to determine a direction of flow over the distance D based on a gradient between an output of the first and second pH sensors over time.

46. (New) The system according to claim 45 wherein the first and second pH sensors are configured to be immobilized in an esophagus.
47. (New) The system according to claim 45 wherein the first and second pH sensors are comprised within a swallowable capsule.
48. (New) The system according to claim 47 wherein the swallowable capsule comprises an image sensor.
49. (New) The system according to claim 45 wherein the first and second pH sensors comprise ion selective field effect transistors.
50. (New) The system according to claim 45 wherein the first and second pH sensors comprise pH sensitive color indicators.
51. (New) The system according to claim 45 comprising a transmitter configured to transmit the output of the first and second pH sensors to an external receiver.